DOCUMENT RESUME

ED 266 554 EA 018 251

AUTHOR Holloway, William H.
TITLE Grade Retention and Increased Academic Standards: A Planned Response to Board Initiative.
PUB DATE Oct 85
NOTE 34p.; Paper presented at the Annual Meeting of the International Society for Educational Planning (Kansas City, MO, October 1985). Appended tables contain small print.
PUB TYPE Speeches/Conference Papers (150) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Standards; Board of Education Policy; Educational Change; Educational Policy; *Enrollment Trends; *Grade Repetition; *Grading; Policy Formation; Secondary Education

ABSTRACT

A school board's proposal to require secondary school students to repeat all required courses in which they received grades of D or F would probably result in significant, unintended increases in enrollment, overcrowding of facilities, and a need to hire many additional staff members. Analysis of the district's current procedures, which deny graduation credit for grades below C in required courses, revealed that 24 percent of the grades awarded in the schools concerned fell into the unacceptable category. Requiring students to repeat these courses would increase the anticipated seventh-grade course enrollment demand by approximately 22 percent in the first year, and add another 7 percent in the second year. These enrollment increases would pass on to the higher grades as the years progressed, without lessening the pressures on lower grades. Over six years the course enrollment demand in secondary schools would increase by approximately 30 percent, an enrollment increase that could incapacitate the system. Secondary effects of the policy might include grade inflation to alleviate the problems posed by grade retention, changes in student morale and behavior, increases in cost, and needs for additional policy development to accommodate these effects. This report concludes with recommendations against the proposal and in favor of considering less stringent measures. Detailed tables supporting the analysis are appended. (PGD)

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Grade Retention and Increased Academic Standards: A Planned Response To Board Initiative

William H. Holloway, Ph.D.
Associate Professor and Chair
Department of
Educational Policy and Administration
School of Education

Paper presented to the annual meeting of the International Society for Educational Planning (ISEP), Kansas city, Missouri, October 1985.

(913) 864-4432
Room 1 Bailey Hall
University of Kansas
Lawrence, Kansas
66045

EA 015 251

Grade Retention and Increased Academic Standards:
A Planned Response To Board Initiative

School districts are complex organizations. Hence, policy formulation - the means by which a community governs its public schools - is no longer a simple task. Negotiated master agreements with certified staff and other personnel groups, accountability for multimillion dollar budgets, conformance with federal and state regulations, and maintenance of large capital inventories are but a few examples of the complex policy tasks that face Boards of Education in the public schools.

A school policy is generally defined as a statement describing an organization's intentions with respect to the district. Because school districts are so complex, the estimate of the effect of any given policy is seldom a simple task. For this reason and others, one task of policy analysis which has become an accepted and recognized field of work - is the determination of intended and unintended outcomes with respect to a new or revised policy issue.

This report describes an analysis of a proposed Board policy for district XYZ that would have substantially altered the organization's intentions with respect to existing grading standards and promotion practice. The purpose of the report is to describe and assess the probable effects of the proposed change. Based on the analysis and related district information, a set of alternatives was recommended for Administrator/Board consideration.

Procedures

The current policy states that while a grade of "D" is considered "passing" in grades (7 - 12), credit for a given "required" course can only be achieved by a grade of "C-" or higher. The proposed policy, on the other hand, would require that for any grade less than "C-" the course be repeated until a passing grade and credit was earned. Such a policy would affect both the promotion and graduation of students at several levels since graduation requirements are expressed in terms of total number of credits earned and distributions within certain areas. It is assumed that the intention of the proposed policy would be to alter the behavior of students who had received D's and F's in the past. That is, the policy would hopefully encourage students to become more serious about their academic efforts and to pass all or most courses the first time rather

than be faced with "D" or "F" grades and course repetition. This, of course, would be the intended outcome. However, a very possible unintended outcome would be large numbers of students continuing to repeat courses.

Because all grades of D and F are of primary interest in such a regulation, it is important to examine the distribution of such grades over all courses for a period of several years. This data base was furnished by the district as a by-product of the computerized grading process. The report was reviewed for consistency, range, and variability across courses, areas, and schools. The general goodness of the data made possible the facilitating asumption. That is, the nature of the data dictated that a course enrollment in any given semester by one student was a measure that could be used to gauge possible enrollment expansion. This it was believed would be a direct and unintended outcome of policy implementation.

The direct effect of enrollment expansion was studied by modeling the enrollment process for grades (7 - 12) over several years. To do this, a general spread-sheet computer program (Multi-Plan) was used with a Zenith (Z-100) microcomputer. System-wide enrollment averages were estimated for each grade level on an annual basis for the year 1983-84. Enrollment demand for incoming sixth graders was estimated based on student head count data for several years past (as provided by the district).

Finally, system-wide averages of D's and F's were estimated from data provided in the Grade Distribution Report. Then, the model was permitted to run a sequence of repeated annual enrollments by grade and by year with estimated proportions of D's and F's forced to repeat all courses in which such grades were received. The observed effects of enrollment expansion were then summarized and reported.

Several runs of the computer simulation model were made varying both the estimated sixth grade enrollment demand and the proportions of D and F grades. The appendices attached to this report show a part of the results of varying the parameter values. In effect, the several runs bracket the expected results and also reflect the results of modified policy alternatives.

Since the proposed policy addressed only "required" courses (generally basics such as English, math, science, etc.), an effort was made to distinguish and estimate such a selective effect separately. However, because course sequences in any given subject area provide for numerous alternative choices, i.e., Basic Math 7 or Math 7, it was not possible to model this change directly. However, the effects of this policy on "required" subjects

can still be globally estimated since the proportion of "elective" courses in any one program is quite small by comparison. That is, the number of electives is estimated to be about one-sixth or one-seventh of a student's total annual program on the average.

Figure 1 which follows demonstrates how the model operates. The left-most (column) of figures identifies the year for which action occurs. The first year, 1983-84, contains estimated initial values for all grade levels. Subsequent years present projected values of course enrollments for all grade levels except the sixth grade which is taken as a constant and an important parameter in the model. Data for this constant was estimated from known current populations and the assumption that most sixth graders would elect and complete twelve units in their seventh grade year.

Across the top of the figure, grade levels are identified. Just below each is the estimated initial enrollment demand for the year 1983-84. Beyond these values, the formulas in the respective boxes show how subsequent values of enrollment demand were calculated for each grade and each succeeding year. For example, initial value for the seventh grade is 4470 and the first computed projection for seventh grade is 6081.7.

The calculation of values for the seventh grade differs slightly from other cells in the table and for all other grades. For example, seventh grade course demand will encompass all of the sixth grade (5000) plus about 24% of the current seventh grade who will be required to repeat courses under the provisions of the new policy. Thus, 5000 plus (.24) x (4470) yields an estimated seventh grade enrollment demand of 6081 for the 1984-85 school year. This was the first year the policy could have been in effect with the net result that expected course enrollments would be about 1000 more than expected. The same process is repeated for each subsequent year in each run of the model.

Looking at the computation of projections for the eighth and all other grades, the process is similar. The enrollment demand represented by the seventh graders will only be about 76% of normal since the other 24% of the initial eighth grade enrollment demand (4385) will repeat courses. Thus, the total enrollment demand for the 1984-85 year will be the sum of these two numbers or about 4449. This number represents a modest decrease over what might normally be expected. However, the following year a sizeable increase is noted. Each subsequent year for each of the remaining grade levels is calculated in like manner.

Model Parameters

The parameters of a simulation model are values that can be changed to reflect different conditions or assumptions. In this model, there are three important parameters. Two of these have been allowed to vary and a third has been held constant because it is believed the most likely values were employed. These are defined as follows:

1. Enrollment Demand (Grade 6)
   Values used: 4500, 5000, 5285, and 5500
2. Proportion of D's and F's (System-wide)
   Values used: 24.2% and 7.0%
3. Enrollment Demand (Grades 7 - 12) for 1983-84
   Held constant at most likely estimates

The Model

Year	6th Gd	7th Gd	8th Gd ----	12th
1983-84	5000	4470	4385	
1984-85	5000	5000 + (.242)(4470) = 6081.7	(4470)(.758) + (4385)(.242) = 4449.4	----
1985-86	5000	5000 + (.242)(6082) = 6471.8	(6082)(.758) + (4449)(.242) = 5686.7	----

Figure 1
The Grade Policy Model in Operation

Enabling Model Assumptions

Modeling the dynamics of real systems usually requires certain assumptions about how the real world operates. Since these assumptions tend to limit dynamic interactions, it is useful to state the assumptions so that others can make their own assessments of how limiting the departures are in terms of congruence with the actual system.

1. The district-wide average of D's and F's by year or semester is 24.2% of all course enrollments. This means that on the average a student has a one in four chance of getting a D or an F in any given course in which he or she is enrolled.
2. There are 25,708 course enrollments per year for grades (7 - 12) on the average. In reality, this number will decline slightly each succeeding year due to student population decline.
3. There are 6,229 D's and F's given per year for grades (7 - 12) on the average.
4. There are 4,285 course enrollments per year per grade level (7 - 12) on the average.
5. Students in grades (8 - 12) will enroll for 10 courses per year on the average. Sixth grade students will enroll for 12 courses per year as seventh graders.

Findings

Public school systems are generally viewed as being enrollment driven. That is, the number of students to be served in a given district is a primary determinant of the number of teachers that must be employed, the size and scope of the program, the available fiscal resources, and the number of classrooms that must be available. For this reason, knowledge of a district's enrollment history is important to many studies and to this one in particular.

Table 1 shows the sixth grade student enrollments for three years past for each of the junior high schools and as a combined total. The three-year trend shows a slow decline in numbers. Although this trend was not reflected in the model, such a change would be easy to enact and the resultant data could be acquired on short notice. Instead, the model used a constant population number of 440 students who will each require 12 courses in their seventh grade year for a total of 5,280.

Table 1

Sixth Grade Population History

Year	School F	School C	Total
1981-82	227	262	489
1982-83	230	256	486
1983-84	248	192	440

As previously noted, this figure is a key parameter in the model and several different values were used to bracket the expected figure of 5,280 (4500, 5000, and 5500).

Tables 2, 3, and 4 show similar enrollment histories for the respective junior and senior highs. The overall totals (see Table 4) indicate district enrollment is declining at the rate of about 12 - 13% over a ten-year period. In this study, the most recent enrollment data (1983-84) was used to estimate course enrollment demand for that year. That is, 2,439 students produced an average of 25,708 course enrollments or about 10.5 courses per student per year. From this data, the course enrollment demand for each grade level (7-12) was estimated for the initial year.

Table 2

F Junior High Enrollments

Year	7th	8th	9th	Totals
1979-80	192	165	191	548
1980-81	210	158	144	512
1981-82	220	200	150	570
1982-83	261	198	161	620
1983-84	238	214	179	631

Table 3

C Junior High Enrollments

Year	7th	8th	9th	Totals
1979-80	221	276	283	780
1980-81	238	213	288	739
1981-82	240	252	222	714
1982-83	275	233	247	755
1983-84	277	277	223	777

Table 4

Junior High/Senior High Enrollment History

Year	7th	8th	9th	10th	11th	12th	Totals
1979-80	413	441	474	441	447	395	2611
1980-81	448	371	432	439	371	432	2493
1981-82	460	452	372	396	394	343	2417
1982-83	536	431	408	358	352	373	2458
1983-84	515	491	402	385	326	320	2439

Table 5 is a summary of the course enrollment data provided by the district. The same information base also provided estimates of the propotion of D's and F's given over a three-year period in each scheduled class. This data provides a means of estimating the two remaining parameters in the model. That is, the estimate of the proportion of D's and F's for any given year was obtained from this source as was the basis for calculating expected course enrollment frequencies by grade level.

Several observations derived from this data may be worth noting for future consideration. First, the proportion of D's and F's is 24.2% overall and 17.8% and 6.4% respectively. Initially, this was believed to be unusually high. However, checks with several other school districts revealed that this proportion was about average. Still, the reality that one in four students enrolling in a class will receive such a grade seems somewhat severe.

Table 5

Course Enrollment and D and F Grade Summary

School	Year	Tot.Crse Enrolls.	Total D's	% D's	Total F's	% F's	Total D's & F's	Percent D's & F's
	1981	9644	1584	16.4	727	7.5	2311	24.0
C	1982	7942	1417	17.8	547	6.9	1964	24.7
	1983	8518	1717	20.2	618	7.3	2335	27.4
	1981	6218	1266	20.4	328	5.3	1594	25.6
F	1982	6614	1367	20.7	454	6.9	1821	27.5
	1983	7472	1524	20.4	388	5.2	1912	25.6
	1981	11274	1906	16.9	610	5.4	2516	22.3
S	1982	10175	1563	15.4	609	6.0	2172	21.3
	1983	9266	1419	15.3	643	6.9	2062	22.3

A second observation relates to the distribution of D's and F's over individual courses. An examination of the unsummarized data revealed that the "basic" courses (math, English, science, social science, etc.) generally tend to have much higher rates of D's and F's than do the elective courses. In effect, we are least successful in education in those courses held to be of greatest importance to society and the adult lives of individuals.

Thirdly, the data did not reveal how many students or what percent of the student population actually receive one or more D's and F's. Depending on the way in which the poorer grades are distributed over students, the answer to this question might be as low as 20% or as high as 60%. If the latter estimate is true, this would mean that sixty percent of the population are doing poorly in their academic careers. Such a finding might justify a study of grade frequencies to determine what the ratio is among students in grades (7 - 12).

Finally, though grade distributions over courses showed some amount of variability, it seemed clear that teachers in the system are generally operating from the concept of "normal curve" grading. This may be explained on the basis of a formal policy statement or it may be that the teachers have informally adopted this concept as a system-wide policy. In either case, the district ought to be aware of what is at work and may wish to discuss and possibly act on some of the greater grade departures from normal curve grading. For example, in 1982, Math 9 had a failure rate of 47.5%, Home Economics I a rate of 49.2% and English III a rate of 58.2%. Something seems to be wrong or at least an explanation ought to be forthcoming when upwards of 50% of the enrollment in a course cannot achieve even modest success.

Primary Effects

Table 6 depicts the expected effects of the new policy on course enrollments in grades (7 - 12) for a six-year period. In this summary table, sixth grade enrollment demand is 5,280 (most likely), the proportion of D's and F's is 24.2% and the enrollment demand for grades (7 - 12) is as previously noted for the 1983-84 year. The course enrollment report shows that under normal circumstances, course enrollment demand for grades (7 - 9) would total about 15,900. Data generated by the simulation model indicates course enrollment demand would expand to about 18,900 in three years and to about 20,700 over a six-year period. Most building administrators would recognize this as an insurmountable problem of enrollment expansion that could not be addressed under present conditions. Generally, this happens because current building utilization is about 80 - 90% of rated capacity even in periods of decline. Hence, the physical facilities would not accommodate such increases to say nothing of needs for additional teaching staff. In essence, the district would experience enrollment expansion that would approach severe system incapacitation.

Table 6

Projected Course Enrollments Over A Six-Year Period Given New Policy Enactment

Year	7th	8th	9th	10th	11th	12th	Tot Enrol	Num Incr	% Incr
(Initial Yr.) 1983-84	4470	4385	4335	4235	4185	4100	25710	0	0
1984-85	6362	4450	4373	4311	4223	4164	27882	2172	1.08
1985-86	6820	5899	4431	4358	4290	4209	30006	2123	1.08
1986-87	6930	6596	5544	4413	4341	4270	32095	2090	1.07
1987-88	6957	6850	6342	5270	4396	4324	34139	2043	1.06
1988-89	6964	6931	6727	6083	5059	4378	36141	2002	1.06
1989-90	6965	6956	6882	6571	5835	4894	38102	1961	1.05
Six-Year Totals	2495	2571	2547	2336	1650	794		12392	1.48

Parameter Values:
Enroll. Demand (6th) = 5,280
Proport of D's, F's = 24.2%
Succession Rate = 75.8%

Additional model runs were made using different values of the parameters. In particular, a 7% rate was used to reflect the effects of requiring that students repeat only those courses in which they received a grade of "F". This would appear to be a much more moderate policy alternative and one which the school system might be able to accommodate.

Figure 2 summarizes the overall enrollment expansion effects for grades (7 - 12) under three different alternatives. In this instance, sixth grade enrollment demand is held constant at 5000 which is just slightly less than expected. The graph portrays the relative differences between the several alternatives. The first value is determined by a 1% course repetition rate which is an estimate of what occurs under normal circumstances. The second value is the result of a 7% alternative. The third value is the 24% alternative. Each is shown for the forecase period of six years.

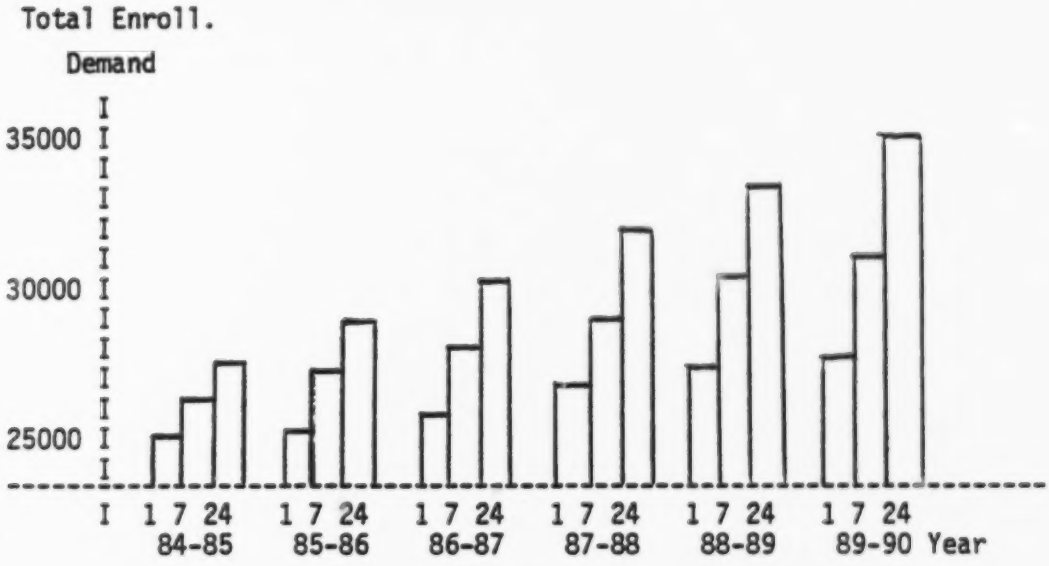

Figure 2

Enrollment Expansion Effects For A Six-Year Period For Three Different Alternatives (1%, 7%, and 24%)

A forecast period of six years appears to be advisable since beyond this range most predictions have little reliability. In addition, the enrollment expansion effect nearly reaches its expected limit. That is, the total effect would reach an upper limit after eight years. For the most drastic alternative (24%), the total effect would approach 40,000 for a maximum difference of nearly 15,000. Thereafter, all changes would reflect only the changes occurring in sixth grade enrollments. If this population should decline, then the total enrollment would also decline.

Secondary Effects

The simulation model operates within noted limiting assumptions and as though enrollment expansion were the only consequence of the proposed policy. This, of course, is not true although enrollment expansion is believed to be the most direct and, therefore, the primary effect. In all likelihood, enrollment expansion would occur with an impact estimated to be about 75% of the maximum values shown for the respective options. At about the same time, several other factors would begin to have an impact and we can only speculate on the combined effects of these secondary factors.

1. Grade Inflation. The present, district-wide grading practice appears to be related to the normal curve. It is modestly conservative and does not represent any combined effort to "give the store away." If the proposed policy were to be implemented as presently worded, it is believed that teachers might informally operate to moderate the enrollment expansion effect by giving higher grades overall than has been the case in past practice. Reports similar to those used as baseline data in this study would soon detect how widespread this effect might be after several years.

2. Student Behavior Change. It is believed that the real intent of the policy was to strongly encourage students to become more serious about their academic work and as a result to receive fewer D's and F's or none at all. However, this outcome would be confounded by the adopted practice of normal curve grading. That is, under the normal curve assumption a certain proportion of grades will be D's and F's regardless. Hence, even if students did change their academic behavior completely, a certain number of students would still receive poor grades.

Eventually, this circumstance could have severe effects on student morale. That is, if the effort to achieve satisfactory academic reports is perceived as a "no win" process, then, students could be expected to respond in the only legitimate way they can and that would be to "withdraw". In short, the final result would be that a small number of students might respond positively to the coercive measures of the new policy, but many more would simply become discouraged and their behavior might become even less manageable than is presently the case.

3. Increased Tangible Costs. A secondary outcome related directly to enrollment expansion is the probable need for additional teaching staff and physical facilities. Interim methods could be used to delay this situation for a short time. These would include increasing class size and shortening the length of class periods to absolute minimums. However, within two to

three years more definitive action would be necessary since there are clear state provisions about what constitutes the minimum period of study and how many students can be housed in a given physical space. Changes in the personnel agreement would also have to be considered.

4. Additional Policy Needs. Some policies are sufficiently complex that enactment triggers a series of related changes in order to accomodate the original change. Particularly is this true of policies that are ill-advised from the beginning. Enactment of the proposed new policy would certainly lead to a need to reconsider other matters. For example, if a small number of students needed to repeat courses several times a number of related problems arise which need consideration. First, teachers might award passing grades just to move the student to the next level of instruction. Thus, related grading policies might be necessary. Alternatively, a student could become "misplaced" with a much younger age group and sizeable behavior problems develop as a consequence. Since the district does sponsor summer and evening programs, it would be possible to address serious problems through this avenue. However, the expected increases in course repetitions would likely necessitate commiting additional funds to support these programs and such a solution would constitute an additional economic drain on the regular program.

Discussions following the receipt of this report may reveal additional secondary outcomes that can be identified as being desirable or undesirable. Such action is to be encouraged. Obviously, this analysis could not and did not attempt to be comprehensive beyond the effects that seemed most likely.

Conclusions and Recommendations

This report constitutes a policy analysis of a proposed new school Board policy. It is believed that the intention of the new policy would be to encourage students to become more serious about their academic performance. The analysis suggests that contrary to expectations the policy would have incapacitating effects on the system. The primary outcome was described as unmanageable enrollment expansion effect. The intended effect of changed student behavior would occur for some students but not enough to offset the effect of expansion that would almost certainly occur to an estimated level of 75% of predicted maximums. Further, it is entirely possible that a system-wide grading practice based on the normal curve would operate to negate any hoped-for outcomes through the necessity of always awarding a certain proportion of D's and F's. The confounding effect of these conflicting

outcomes could be disastrous.

A further possibility is that the policy would be received by students and teachers in its worst light. That is, the policy conveys a message of - "you are going to do things over and over until you get them right." Such an interpretation is extremely punitive in nature but entirely possible. Clearly, the widespread acceptance of the Board's action in this regard would have more negative than positive implications. Hence, the trade-off does not appear to be a reasonable exchange even under the best of circumstances.

Recommendations

The following recommendations are offered in light of the results of this study. It is believed that they offer a range of alternatives for which the most likely consequences are accurately estimated and are worthy of considered study.

1. Reject the proposed policy outright and do not act to change the present system. At worst, the district has a fairly conservative grading system based on the normal curve concept and students who do not expend appropriate efforts cannot hope to be successful. The problem with the normal curve concept is that some proportion of grades must always be D or F regardless of student effort. This does not allow for the possibility that most, if not all, students are trying to perform satisfactorily. Additionally, the instructional objectives for individual courses are seldom clear. Therefore, not knowing precisely what is expected of students in a given learning situation results in widespread misunderstanding about what is necessary in order to be successful.

2. Reject the proposed policy outright but continue to study ways to achieve the desired outcome of improved student performance. This option will likely drive the system to "mastery" or "competancy based" instruction. Under this perspective, instructional objectives and the related measures of successful performance must be explicit. The normal curve concept of grading is abandoned in favor of a philosophy that acknowledges that all or most students can meet minimum competency levels given sufficient time and appropriate instruction. It is a mode of instruction that is gaining in popularity across the nation today.

3. Reject the proposed policy but adopt a modified version. The results of this study suggest that the district could possibly survive a 7% solution. In this case, only grades of "F" would necessitate repeating a given course. Alternatively, this action could be restricted to only those courses identified as "basic" courses. In this case, the estimated effects could be further reduced and more easily accomodated. However, it is believed that even this version of the original proposal would not accomplish the desired outcome and the unintended outcomes would far outweigh the original intention.

Other alternatives beyond these may emerge as Board/Administrator discussions progress. Obviously, there is always the alternative of adopting the policy as presently worded though this action is clearly not recommended.

In addition to these possible actions there are several other needs that could be considered short of policy enactment.

First, a grade distribution study should be completed. Such a study would simply examine the grade reports of all (or preferably a good random sample of) students to determine grade distribution frequencies. From this data it would be possible to answer the question, "How many students receive one or more D's or F's?" If this number is about 20 - 25%, there is no cause for alarm. If the number exceeds 40% and approaches as much as 60% (as is suspected), then the district ought to seek explanations as to why such a severe policy is necessary or permitted to prevail. If the number falls between the above ranges, then the district may wish to consider whether or not such further study of the practice could be justified.

Second, the grade distribution report furnished by the district as a basis for this study deserves some attention. It is recommended that explanations be sought for those courses in which the grade distribution reflects a disproportionate share of D's and F's. In some cases, these proportions approached or exceeded 50%. It may be that circumstances justify such results. Conversely, it is possible that grades are being used in certain instances as a punitive measure and in no way reflect whatever learning may have occured. This would constitute an intolerable situation for students.

Author's Note: The school board of district XYZ reviewed the report and two months later acted not to adopt the proposed policy. District administrators are pursuing followup studies of district grading practices.

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APPENDICES

Table 1

ool	Year	Junction Grade/ Total D's	City Enrollment Total F's	Grade Table 1 Distribution Tot. Enroll.	Policy Summary Σ D's	Model Data Σ F's	Total D's & F's	Σ D's & F's
C	1981	1584	727	9644	16.4	7.5	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1367	454	6614	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
S	1981	1904	610	11374	16.9	5.4	2514	22.3
	1982	1543	609	10175	15.4	6	2172	21.3
	1983	1419	443	9266	15.3	6.9	2062	22.3
totals	///////	13743	4924	77123	17.9	6.4	18487	24.2
rrent:	Values/	4500 /	0.343/	0.758				

ades/ l./Year	Six	Alternative Seven	Grade Eight	Table 2 Policy Nine	Forecasting Ten	Model Eleven	Twelve	Totals	Increase (No.)	Increase (%)
3 - 84	4500	4470	4385	4335	4235	4185	4100	25710	0	0
4 - 85	4500	5561.74	4449.43	4372.9	4310.8	4222.9	4144.43	27102.2	1392.2	1.054150136134
5 86	4500	5850.78108	5307.72098	4430.90974	4357.8718	4289.5282	4208.75036	28445.56304	1343.36204	1.0495066331868
6 - 87	4500	5915.08902136	5719.3605358	5095.53265992	4413.23455852	4341.3326488	4249.97993882	29755.32936292	1309.76730292	1.0460444697593
7 88	4500	5931.445143169	5868.329127855	5568.394189837	4930.416519381	4395.834296368	4324.065892912	31018.68454952	1263.355204602	1.0424581115358
8 - 89	4500	5935.458124447	5916.322667443	5795.744872854	5414.003593587	4801.047621412	4378.466197532	32241.0430775	1222.358587973	1.0394071167807
9 - 90	4500	5935.380864165	5930.827344008	5887.142841168	5703.343483272	5245.44824832	4498.782916833	33422.16569977	1181.122622271	1.0366341318255
- Year	Increase	1434.380864165	1545.827344008	1552.142841168	1468.343483272	1080.44824832	598.7829168328	7712.165699744	7712.165699744	1.299967549583

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Table 2

School	Year	Junction Grade/ Total D's	City Enrollment Total F's	Grade Table 1 Distribution Tot. Enroll.	Policy Summary. % D's	Model Data % F's	Total D's & F's	% D's & F's
C	1981	1584	727	9444	16.4	7.8	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1347	454	6614	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
S	1981	1906	410	11374	16.9	5.4	2316	22.3
	1982	1563	609	10175	15.4	6	2172	21.3
	1983	1419	643	9266	15.3	6.9	2062	22.3
and Totals	//////	13763	4924	77123	17.9	6.4	18687	24.2
Current/	Values/	5000/	0.242/	0.758				

Grades/ Yrs./Year	Six	Alternative Seven	Grade Eight	Table 2 Policy Nine	Forecasting Ten	Model Eleven	Twelve	Totals	Increase (No.)	Increase (%)
1983 - 84	5000	4470	4385	4335	4235	4185	4100	25710	0	0
1984 - 85	5000	4081.74	4449.43	4372.9	4310.8	4222.9	4144.43	27602.2	1892.2	1.07359782185
1985 - 86	5000	4471.78108	5486.72098	4430.90974	4357.8718	4289.5282	4208.75026	29445.56206	1843.36206	1.06678315714
1986 - 87	5000	4566.17102136	6281.7965358	5382.81465992	4413.23455852	4341.3324488	4249.97993852	31255.32936292	1809.76730292	1.06146144231
1987 - 88	5000	4589.013387169	6497.352395855	6044.242921837	5148.176278381	4395.834296368	4324.065292912	33018.68456952	1763.355206602	1.05641774515
1988 - 89	5000	4594.541239695	6566.831427271	6392.539903142	5842.554793395	4966.10951644	4378.464197532	34741.0430775	1722.358507973	1.05214314733
1989 - 90	5000	4595.878980006	6587.835465088	6524.652878432	6259.443506583	5630.455036377	4823.899833279	36422.16549977	1681.122622271	1.04839010212
6 - Year	Increases	2135.878980006	2202.835465088	2189.652878432	2024.443506583	1445.455036377	723.8998332792	10712.16549977	10712.16549977	1.41665344393

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Table 3

Junction City Grade Policy Model

Grade/ Enrollment Table 1 Distribution Summary Data

School	Year	Total B's	Total F's	Tot. Enroll.	% B's	% F's	Total B's & F's	% B's & F's
C	1981	1584	727	9644	16.4	7.5	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1367	454	6614	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
S	1981	1906	610	11274	16.9	5.4	2516	22.3
	1982	1563	609	10175	15.4	6	2172	21.3
	1983	1419	643	9266	15.3	6.9	2062	22.3
Totals	//////	13763	4924	77123	17.9	6.4	18687	24.2
rrent/	Values	5280	1642	0.758				

Alternative Grade Table 2 Policy Forecasting Model

Grades/ Yr./Year	Six	Seven	Eight	Nine	Ten	Eleven	Twelve	Totals	Increase (No.)	Increase (%)
3 - 84	5280	4470	4385	4335	4235	4185	4100	25710	0	0
4 - 85	5280	6361.74	4449.43	4373.9	4310.8	4222.9	4164.43	27882.2	2172.2	1.084488525845
5 - 86	5280	6819.54108	5898.96098	4430.90974	4357.8718	4289.5282	4208.75026	30005.56206	2123.36206	1.076154753212
6 - 87	5280	6930.32894136	6596.7604958	5543.69257992	4413.23455852	4341.3326488	4269.97993852	32095.32936292	2089.76730292	1.06964599759
7 - 88	5280	6957.139603809	6849.605425935	6341.918211757	5270.121738741	4395.834296388	4324.065292912	34138.68456952	2043.355206602	1.063665188897
8 - 89	5280	6963.627784122	6931.116332763	6724.745120104	6082.543445787	5058.544177687	4378.466197532	36141.0430775	2002.358507973	1.058653451517
9 - 90	5280	6965.197923758	6955.760012893	6881.6584993	6570.848319438	5834.735637688	4893.965304489	38102.16549977	1961.122422271	1.054263033252
- Year	Increases	2495.197923758	2570.760012893	2546.6584993	2335.848319438	1649.735637688	793.9653044892	12392.16549977	12392.16549977	1.481997087972

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Table 4

School	Year	Junction Grade/ Total B's	City Enrollment Total F's	Grade Table 1 Distribution Tot. Enroll.	Policy Summary % B's	Model Data % F's	Total B's & F's	% B's & F's
C	1981	1584	727	9644	16.4	7.5	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1367	454	6614	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
S	1981	1904	610	11274	16.9	5.4	2514	22.3
	1982	1543	609	10175	15.4	6	2172	21.3
	1983	1419	643	9266	15.3	6.9	2062	22.3
Grand Totals	//////	13763	4924	77123	17.9	6.4	18487	24.2
Current	(Values)	.8508	.3,242	0.758				

Grades/ Yrs./Year	Six	Alternative Seven	Grade Eight	Table 2 Policy Nine	Forecasting Ten	Model Eleven	Twelve	Totals	Increase (No.)	Increase (%)
1983 - 84	5500	4470	4385	4335	4235	4185	4100	25710	0	0
1984 - 85	5500	6581.74	4449.43	4372.9	4310.8	4222.9	4164.43	28102.2	2392.2	1.093042507585
1985 - 86	5500	7092.78108	6065.72098	4430.90974	4357.8718	4289.5282	4208.75026	30445.54204	2343.34204	1.083387139085
1986 - 87	5500	7216.45302134	6844.2325358	5470.09465992	4413.23455852	4341.3326488	4269.97993852	32755.32936292	2309.78730292	1.075865484052
1987 - 88	5500	7246.381631149	7126.375463855	6560.091653837	5365.934031381	4395.834296368	4324.065292912	35018.68456952	2263.355206602	1.069098838284
1988 - 89	5500	7253.424354743	7217.340187079	6989.33493343	6271.105993203	5131.171411508	4378.466197532	37241.0430775	2222.358507973	1.063442078447
1989 - 90	5500	7255.377093848	7244.843584148	7142.142915496	6815.523829895	5995.241824433	4949.016749724	39422.16569977	2181.122622271	1.058547710301
Total - Year	Increases	2785.377093848	2859.843584148	2827.142915496	2580.523829895	1810.241824433	849.0167497254	13712.16569977	13712.16569977	1.533339778287

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Table 5

School	Year	Junction City Grade/ Total D's	Grade Enrollment Total F's	Table 1 Distribution -Tot. Enroll.	Policy Summary Z D's	Model Data Z F's	Total D's & F's	Z D's & F's
C	1981	1584	727	9644	16.4	7.8	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1367	454	6614	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
S	1981	1906	410	11274	16.9	5.4	2316	22.3
	1982	1563	609	10175	15.4	6	2172	21.3
	1983	1419	643	9264	15.3	6.9	2062	22.3
rand Totals	///////	13763	4924	77123	17.9	6.4	18487	24.2
Current	Values:	4500	.063	0.93				

Grade/ Well./Year	Bin	Alternative Seven	Grade Eight	Table 2 Policy Nine	Forecasting Ten	Model Eleven	Twelve	Totals	Increase (No.)	Increase (Z)
1983 - 84	4500	4470	4385	4335	4235	4185	4100	25710	0	0
1984 - 85	4500	4812.9	4464.05	4381.5	4328	4231.5	4179.05	26397	687	1.02672112018
1985 - 86	4500	4834.903	4788.4805	4458.2715	4377.755	4321.245	4227.8285	27010.4835	613.4835	1.0232406532347
1986 - 87	4500	4838.58321	4833.513425	4745.36587	4452.635345	4373.7993	4314.705845	27578.602995	568.119495	1.021033296014
1987 - 88	4500	4838.7808247	4838.22832505	4828.74309615	4743.47473325	4447.11682185	4369.66275815	28065.92458915	487.32356415	1.0176703498B1
1988 - 89	4500	4838.7090057729	4838.667749725	4837.564339027	4822.774316747	4722.729679452	4441.695037391	28502.14019487	436.215634921	1.0155424A335
1989 - 90	4500	4838.7096346841	4838.706166169	4838.590512376	4836.529055447	4815.771184554	4703.087254508	28871.3638093	369.223615225	1.0129542417?7
Six - Year	Increases	368.7096346841	453.7061661687	503.5905123757	601.5290556474	630.7711845563	603.0872545078	3161.363809294	3161.363809294	1.122942419454

Table 6

School	Year	Junction Grade/ Total D's	City Enrollment Total F's	Grade Table 1 Distribution Tot. Enroll.	Policy Summary % D's	Model Data % F's	Total D's & F's	% D's & F's
C	1981	1584	727	9644	16.4	7.5	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1367	454	6614	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
S	1981	1906	610	11274	16.9	5.4	2516	22.3
	1982	1563	609	10175	15.4	6	2172	21.3
	1983	1419	643	9264	15.3	6.9	2062	22.3
and Totals	///////	13763	4924	77123	17.9	6.4	18687	24.2
Current	Walnut	5000	0.07	0.93				

Grades/ Yroll./Year	Six	Alternative Seven	Grade Eight	Table 2 Policy Nine	Forecasting Ten	Model Eleven	Twelve	Totals	Increase (No.)	Increase (%)
1983 - 84	5000	4470	4385	4335	4235	4185	4100	25710	0	0
1984 - 85	5000	5312.9	4464.05	4381.5	4328	4231.5	4179.05	26897	1187	1.046168805917
1985 - 86	5000	5371.903	5253.4805	4458.2715	4377.755	4321.245	4227.8285	28010.4835	1113.4835	1.041398055545
1986 - 87	5000	5374.03321	5363.613428	5197.81587	4452.635345	4373.7993	4314.705845	29078.602995	1068.119495	1.038132847475
1987 - 88	5000	5374.3223247	5375.16382505	5352.00759415	5145.45323325	4447.11682185	4349.66275815	30065.92455915	987.32356415	1.033953610444
1988 - 89	5000	5374.3425629729	5374.241229725	5373.542889027	5337.562790747	5096.755684452	4441.695037391	31002.14019407	936.215634921	1.031138497268
1989 - 90	5000	5374.3439799391	5374.3354494187	5376.052345876	5371.024282147	5330.706293304	5050.901439158	31871.3638093	869.223615224	1.028037535784
Six - Year	Increase	906.3439799391	991.3354494187	1041.052345876	1136.024282147	1135.706293304	950.9014391578	6161.363809297	6161.363809297	1.239644834600

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Table 7

School	Year	Junction Grade/ Total D's	City Enrollment Total F's	Grade Table 1 Distribution Tot. Enroll.	Policy Summary % D's	Model Data % F's	Total D's & F's	% D's & F's
C	1981	1584	727	9644	16.4	7.5	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1367	454	6614	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
B	1981	1906	610	11274	16.9	5.4	2516	22.3
	1982	1563	609	10175	15.4	6	2172	21.3
	1983	1419	643	9266	15.3	6.9	2062	22.3
Grand Totals	///////	13763	4924	77123	17.9	6.4	18687	24.2
Current	Values	5280	0.07	0.93				

Grades/ Enroll./Year	Six	Alternative Seven	Grade Eight	Table 2 Policy Nine	Forecasting Ten	Model Eleven	Twelve	Totals	Increase (No.)	Increase (%)
1983 - 84	5280	4470	4385	4335	4235	4185	4100	25710	0	0
1984 - 85	5280	5593.9	4464.05	4381.5	4328	4231.5	4179.05	27177	1467	1.05705950991
1985 - 86	5280	5671.503	5513.8805	4458.2715	4377.755	4321.245	4227.8285	28570.4835	1393.4835	1.05127436803
1986 - 87	5280	5677.00521	5660.469425	5439.98787	4452.635345	4373.7993	4314.705845	29918.402995	1348.119495	1.04718574311
1987 - 88	5280	5677.3903447	5675.84770505	5645.03571615	5370.87319325	4447.11682185	4369.66275815	31185.92655915	1267.32356415	1.04235904879
1988 - 89	5280	5677.417325529	5677.282378525	5673.490868827	5428.844339547	5304.210247252	4441.695037391	32402.14019407	1216.213634921	1.03899879750
1989 - 90	5280	5677.419212787	5677.407879239	5677.030972634	5470.341608987	5403.469953086	5245.694182562	33551.3638093	1149.223615226	1.03546782184
Each - Year	Increases	1207.419212787	1292.407879239	1342.030972634	1435.341608987	1418.469953086	1145.694182562	7841.363809297	7841.363809297	1.30499275804

Table 8

School	Year	Junction Grade/ Total D's	City Enrollment Total F's	Grade Table 1 Distribution Tot. Enroll.	Policy Summary Z D's	Model Data Z F's	Total D's & F's	Z D's & F's
C	1981	1584	727	9644	16.4	7.5	2311	24
	1982	1417	547	7942	17.8	6.9	1964	24.7
	1983	1717	618	8518	20.2	7.3	2335	27.4
F	1981	1266	328	6218	20.4	5.3	1594	25.6
	1982	1367	454	6414	20.7	6.9	1821	27.5
	1983	1524	388	7472	20.4	5.2	1912	25.6
S	1981	1906	610	11274	16.9	5.4	2516	22.3
	1982	1543	609	10175	15.4	6	2172	21.3
	1983	1419	443	9266	15.3	6.9	2042	22.3
Grand Totals	///////	13763	4924	77123	17.9	6.4	18687	24.2
Current	Values	5500	0.07	0.93				

Grades/ Enroll./Year	Six	Alternative Seven	Grade Eight	Table 2 Policy Nine	Forecasting Ten	Model Eleven	Twelve	Totals	Increase (No.)	Increase (Z)
1983 - 84	5500	4470	4385	4335	4235	4185	4100	25710	0	0
1984 - 85	5500	5812.9	4464.05	4381.5	4328	4231.5	4179.05	27397	1687	1.065616491638
1985 - 86	5500	5906.903	5718.4805	4458.2715	4377.788	4321.348	4227.8285	29010.4833	1613.4833	1.058892787231
1986 - 87	5500	5913.48321	5893.713425	5630.26587	4452.635348	4373.7993	4314.705845	30578.602995	1568.119495	1.054063545678
1987 - 88	5500	5913.9438247	5912.09932506	5875.27209615	5547.83173328	4447.11682186	4369.66275815	32045.92683915	1467.32354415	1.048439354232
1988 - 89	5500	5913.976047729	5913.814709725	5909.521419027	5852.351270747	5470.781689452	4441.695037391	33502.14019407	1456.213434921	1.044789406745
1989 - 90	5500	5913.978324741	5913.964772649	5913.514179376	5905.519508647	5825.641400054	5398.748623808	34871.3638093	1369.223615224	1.040849715763
Six - Year	Increases	1443.978324741	1528.964772649	1578.514179376	1670.519508647	1640.641400054	1298.748623808	9161.363809297	9161.363809297	1.356334648389

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